



Exposing the Gaps in Awareness and Knowledge of Symptoms, Signs and Risk Factors of Colorectal Cancer among Residents in Peri-urban Olowora Community, South – West Geopolitical Zone of Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author AEK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author AOS managed the analyses of the study and the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Aim: This study is aimed at exposing the gaps in awareness and knowledge of symptoms, signs and risk factors of colorectal cancer (CRC) among residents in Olowora Community.

Methodology: Data from this cross sectional study were collected through self-administered questionnaire to consenting residents of Olowora community of Ikosi - Isheri Local Government Area of Lagos State, located in South Western region of Nigeria over a period of one (1) month in 2015.

Results: A total of 231 questionnaires were analyzed. Males were slightly over-represented with a

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male to female of 1.08:1 and a mean age of 30.4 years. The literacy rate was excellent with 79.2% of respondents having post-secondary qualification. Twenty-Eight percent (28.1%) of respondents were knowledgeable of the warning symptoms and signs of colorectal cancer with blood in the stool being the leading worrisome symptom of CRC acknowledged by the respondents (13.4%). Abdominal pain, altered bowel habit, anal itching and anal mass protrusion were other worrisome symptoms of CRC acknowledged by the respondents in 6.5%, 4.8%, 1.7% & 1.7% of cases respectively. Over forty – three percent of respondents were knowledgeable of the risk factors for colorectal cancer with majority of respondents correctly acknowledged diets rich in fats and poor in fibers as the main contributory factor (20.3%). Other risk factors acknowledged were family history of cancer, smoking, prolonged alcohol consumption and radiation in 14.3%, 4.8%, 3.0% and 0.9% respectively.

Conclusion: This study concluded that the knowledge of symptoms, signs and risk factors of CRC is still low.

Keywords: Knowledge; symptoms; signs and risk factors; colorectal cancer; South – West Geopolitical Zone of Nigeria.

1. INTRODUCTION

Although colorectal cancer (CRC) is the third most common malignancy and the fourth leading cause of mortality worldwide [1,2], some studies have shown low levels of knowledge of CRC in many countries [3-7]. These could be partly ascribed to poor recognition of symptoms, signs and risk factors implicated in the clinico-pathological characteristics of CRC.

Predictive symptoms for CRC include rectal bleeding, change in bowel habit, abdominal pain, abdominal mass, and flatulence [2]. Unfortunately, some of these symptoms are also featured in other intestinal diseases including haemorrhoids, inflammatory bowel disease and many other non-malignant conditions [8].

Many factors have been identified in influencing the knowledge of the symptoms, signs and risk factors of CRC. Non-modifiable factors include demographics (age, sex, race, ethnicity, and marital status), income, educational level, medical insurance, family history, healthy or risky behaviours, and access to care (i.e., proximity to healthcare facilities, a regular source of care) [9,10]. On the other hand, modifiable factors include patient knowledge about CRC and screening, attitudes and perception of risk factors for developing of a CRC [10,11].

There is paucity of literature on the knowledge of symptoms, signs and risk factors of CRC in Nigeria. This study is aimed at exposing the gaps in awareness and knowledge of symptoms, signs and risk factors of colorectal cancer among residents in Olowora, South – West Geopolitical Zone of Nigeria.

2. MATERIALS AND METHODS

2.1 Setting and Participants

This community based descriptive and cross sectional study was conducted among residents of Olowora community of Ikosi - Isheri Local Government Area of Lagos state, located in South Western region of Nigeria. This study was carried out by staff of the Departments of Histopathology and Family Medicine in the University of Uyo Teaching Hospital while on vacation in Lagos. Stratified sampling technique was used to recruit consented residents of peri-urban Olowora community of Ikosi- Isheri Local Government Area of Lagos state.

Olowora community has an estimated population of 70,000 persons, the predominant proportion of whom are informal sector workers. A total of 250 participants were approached; these were stratified into five (5) groups according to their streets, each group consisting of 50 participants. This sample size was chosen because the population of Olowora town of Ikosi- Isheri Local Government Area of Lagos state is relatively homogenous in terms of ethnicity, religion and socio-economic factors. Inclusion criteria for the study population were consenting residents who were older than 15 years while the exclusion criteria were those who declined to participate willingly or health ground or who had previous history of cancer or younger than 15 years old.

2.2 Ethics

The researchers visited the Olowora community of Ikosi- Isheri Local Government Area of Lagos state prior to starting the study so that

background information could be provided and to help resolve any query. Participation in the study was voluntary and without any form of compensation. Informed consent was obtained from all participants. Clearance to conduct this study was obtained from the local government health authority.

2.3 Questionnaire

The Data was collected through a self administered questionnaire. The questionnaire was designed to analyze information with regard to demography, knowledge of symptoms, signs and risk factors of colorectal cancer. Demographic information including age, gender, religion, ethnicity, marital status, occupation and educational status were also retrieved. The questionnaires were administered to the residents of Olowora community of Ikosi- Isheri Local Government Area of Lagos state with no prior information or announcements in order to minimize response bias. Questionnaires were distributed over a period of 1 month in 2015.

2.4 Data Collection and Statistical Analysis

Data were collected from 3rd to 31st August, 2015. Data was entered and analyzed on Statistical Packages for the Social Sciences (SPSS) version 20 by *International Business Machines* (IBM) Corporation, America. All qualitative variables are described through frequencies and percentages and all quantitative variables are illustrated through mean and standard deviation. Chi- square test was applied and p values < 0.05 were considered significant. The data for these patients were also presented in tables.

3. RESULTS

3.1 Socio-demographic Characteristics

A total of 250 questionnaires were administered and out of that, 231 were suitable for analysis giving the response rate of 92.4%. Males were slightly over-represented with 48.1% of respondents being females (a male to female =1.08:1). The mean age was 30.4 years with the majority of respondents being aged 26 to 35 years (56.5%) and unmarried (71.9%). The literacy rate was excellent with 79.2% of respondents having post-secondary qualification. Majority of the respondents were either civil

servants (37.7%) or students (25.1%) (See Table 1).

Table 1. Socio-demographic characteristics of the respondents (N = 231)

Socio-demographic characteristics	Number (Percentage)
Age (years)	
16 – 25	56.0 (24.2%)
26 – 35	128.0 (55.4%)
36 – 45	41.0 (17.7%)
46 – 55	6.0 (2.6%)
Gender	
Male	120.0 (51.9%)
Female	111.0 (48.0%)
Marital status	
Single/unmarried	166.0 (71.9%)
Married	64.0 (28.1%)
Highest educational level	
Primary	8.0 (3.5%)
Secondary	40.0 (17.3%)
Higher/Tertiary	183.0 (79.2%)
Types of occupation	
Students	58.0 (25.1%)
Civil Servant	87.0 (37.7%)
Trader	5.0 (2.2%)
Artisans	17.0 (7.4%)
Contractors	16.0 (6.9%)
Unemployed	48.0 (20.8%)

3.2 Knowledge of Respondents on the Warning Symptoms and Signs of Colorectal Cancer with Socio-Demographics

Among respondents, 71.9% had zero knowledge score for warning symptoms and signs while 28.1% of respondents were knowledgeable of the warning symptoms and signs of colorectal cancer. Blood in the stool was the leading worrisome symptom of CRC acknowledged by 31 respondents (13.4%) with majority of them identifying bright red blood in their stools (56.3%). Other appearances of blood in the stools signified by the respondents included coal tar stool (18.7%), dark red blood in stool (12.5%) and muco-bloody stool (12.5%). Frequencies of blood in the stool signified by the respondents were once a day (n=14, 45.2%), twice a week (n=7, 22.6%), once a week (n=5, 16.1%), once a month (n=3, 9.7%), and once in a year (n=2, 6.5%).

Besides blood in the stools, thirty-four respondents listed other worrisome symptoms of CRC (14.7%). Abdominal pain was the 2nd most

common worrisome symptom acknowledged by 15 respondents (6.5%); of these, 12 respondents (5.2%) signified lower abdominal region to be the predominant anatomical site while upper abdominal pain was acknowledged by 3 respondents (1.3%). Only eleven respondents (4.8%) were troubled about altered bowel habit; anal itching and anal mass protrusion were the other worrisome symptoms, acknowledged by 4 (1.7%) respondents each (See Table 2).

Table 2. Awareness/knowledge of warning signs and symptoms of Colorectal cancer {(N = 65 out a total of 231(28.1%)}

Signs and symptoms	Number (Percentage)
Blood in the stool	31.0 (13.4 %)
Abdominal pain	15.0 (6.5 %)
Altered bowel habit	11.0 (4.8 %)
Anal itching	4.0 (1.7 %)
Anal mass protrusion	4.0 (1.7 %)

Knowledge of the respondents about the warning symptoms and signs of CRC was highest among the 36-45 years age group (43.1%) and unmarried (61.5%). Knowledge of the respondents about the symptoms and signs of CRC increased with increasing age (12.3%, 36.9% & 43.1%) for the age groups 16-25, 26-35 and 36-45 years age groups respectively, but sharply decreased for the 46-55 years age groups to 7.7% (See Table 3).

Table 3. Association between Socio-demographic variables and knowledge score on warning symptoms and signs of colorectal cancer

Socio-demographic variables	Knowledge score (Percentage)	p value
Age (years)		<i>p = 0.001</i>
16 – 25	8.0 (12.3%)	
26 – 35	22.0 (36.9%)	
36 – 45	28.0 (43.1%)	
46 – 55	5.0 (7.7%)	
Gender		<i>p < 0.001</i>
Male	41.0 (62.5%)	
Female	24.0 (37.5%)	
Marital status		<i>p = 0.02</i>
Single/unmarried	40.0 (61.5%)	
Married	25.0 (38.5%)	
Highest educational level		<i>p < 0.001</i>
Primary	8.0 (12.5%)	
Secondary	16.0 (25.0%)	
Higher/Tertiary	39.0 (62.5%)	

Male respondents were better at recognizing symptoms and signs of CRC than their counterpart women, they were more likely to recognize blood in the stools (62.5% vs 37.5%; $p = < 0.001$), altered bowel habit (51.9% vs 48.1%; $p = 0.02$), abdominal pain (51.9% vs 48.1%; $P = 0.01$), loss of appetite and irritating sensation at the anus (52.0% vs 48.0%; $p = < 0.001$). It is worthy to note that there is a strong association between gender and knowledge of symptoms and signs of CRC including blood in stools, loss of appetite and irritating sensation at the anus ($p = < 0.001$).

Unmarried respondents were better at recognizing symptoms and signs of CRC than the married, they were more likely to recognize blood in the stools (71.9% vs 28.1%; $p = 0.04$), altered bowel habit; (71.8% vs 28.2%; $p = < 0.001$), abdominal pain (51.9% vs 48.1%; $P = 0.01$), loss of appetite and irritating sensation at the anus (52.0% vs 48.0%; $p = < 0.001$).

The level of knowledge of respondents about the symptoms and signs of CRC increased with increasing educational background (12.5%, 25.0% & 62.5%) for the primary, secondary and tertiary qualifications respectively. In addition, respondents with higher education background are more likely to recognize blood in the stool (87.5% vs 12.5%, $p = < 0.001$), loss of appetite (85.5% vs 14.5%; $p = < 0.001$), and altered bowel habit (95.2% vs 4.8%; $p = < 0.001$). It is worthy to note that there is a strong association between educational status and knowledge of symptoms and signs of CRC including blood in the stools, loss of appetite and altered bowel habit ($p = < 0.001$).

3.3 Knowledge of Respondents on the Risk Factors of Colorectal Cancer and Demographics

Among respondents, 56.7% had zero knowledge score for risk factors of CRC while 43.3% of respondents were knowledgeable of the risk factors for colorectal cancer. Concerning respondents' knowledge of colorectal cancer risk factors, the majority of respondents correctly acknowledged diets rich in fats and poor in fibers as the main contributory factor ($n = 47$; 20.3%). Thirty three respondents identified family history of cancer as one of the risk factors (14.3%) while smoking ($n = 11$; 4.8%), prolonged alcohol consumption ($n = 7$; 3.0%), and radiation ($n = 2$; 0.9%) were also recognized (See Table 4).

Table 4. Awareness/knowledge of risk factors for Colorectal cancer (N = 100 out a total of 231 (43.3%))

Risk factors	Number (Percentage)
Diets rich in fats and poor in fibers	47.0 (20.3%)
Family history of cancer	33.0 (14.3%)
Smoking	11.0 (4.8%)
Alcohol consumption	7.0 (3.0%)
Radiation	2.0 (0.9%)

The respondents' knowledge of colorectal cancer risk factors was highest among the 16-25 years age group (45.0%), this is followed by the 36-45 years age group (28.0%). Respondents within the 46-55 years age group were least knowledgeable of risk factors for CRC (2.0%). There is strong association between the level of knowledge of risk factors for CRC and age group ($p = < 0.001$).

Male respondents were slightly better at recognizing risk factors of CRC than their counterpart females, but there is no statistical difference between gender and level of knowledge of risk factors for CRC (51.5% vs 48.5%; $p = 0.02$).

Unmarried respondents were better at recognizing risk factors of CRC than their counterpart married, but there is statistical difference between marital status and level of knowledge of risk factors for CRC (71.0% vs 29.0%; $p = < 0.001$).

The level of knowledge of respondents about the risk factors of CRC increased with increasing educational background (2.0%, 42.0% & 56.0%) for the primary, secondary and tertiary qualifications respectively. In addition, there is statistical difference between educational background and level of knowledge of risk factors of CRC ($p = < 0.001$) (See Table 5).

4. DISCUSSION

The response rate for our study was 92.4%. This is comparable to the response rate of 80.2% reported in Malaysia [12]. The impressive response rate in our study may be adduced to the high literacy rate of 79.2% and the fact that most of the residents of Olowora community are citizens of upper socio-economic class owing to its closeness to Ikeja, the city of political and administrative power of Lagos state. The literacy

rate of 79.2% in our study compares relatively with 56.9% and 86.5% recorded in Hong Kong and Malaysia respectively [3,13]. These findings could be justified by the fact that most of the respondents in our study were either civil servants (37.7%) or students (25.1%).

Table 5. Association between Socio-demographic variables and knowledge score on risk factors for colorectal cancer

Socio-demographic variables	Knowledge Score on risk factors (Percentage)	p value
Age (years)		$p < 0.001$
16 – 25	45.0 (45.0%)	
26 – 35	25.0 (25.0%)	
36 – 45	28.0 (28.0%)	
46 – 55	2.0 (2.0%)	
Gender		$p = 0.02$
Male	52.0 (51.5%)	
Female	48.0 (48.5%)	
Marital status		$p < 0.001$
Single/unmarried	71.0 (71.0%)	
Married	29.0 (29.0%)	
Highest educational level		$p < 0.001$
Primary	2.0 (2.0%)	
Secondary	42.0 (42.0%)	
Higher/Tertiary	56.0 (56.0%)	

Males were slightly over-represented with 48.1% of respondents being females (a male: female =1.08:1). Majority of the respondents was aged 26 to 35 years (56.5%) and unmarried (71.9%). The age and sex distribution in our study are comparable to other studies in some countries; however, these factors vary with sample population, sampling methods adopted in different research works, as well as cultural belief and life style [3,8,14].

Only a minority of respondents (28.1%) were knowledgeable of the warning symptoms and signs of colorectal cancer with majority of them identifying bright red blood in their stools (56.3%). Other appearances of blood in the stools signified by the respondents included coal tar stool (18.7%), dark red blood in stool (12.5%) and muco-bloody stool (12.5%). These findings compare relatively with a study in Ireland where most respondents correctly identified blood in the bowel motion as a worrisome symptom (62%),

and 45% of these respondents were also concerned about bright red bleeding per rectum [14]. The poor knowledge score for symptoms of colorectal cancer was also documented in Hong Kong where the mean knowledge scores for symptoms of colorectal cancer was 3.23 [3]. The poor knowledge of signs of colorectal cancer was reiterated by the study in Malaysia where 74% of the respondents could not recall any sign of colorectal cancer unaided [12]. Unexpectedly, despite the high literacy rate in this study, most respondents have poor knowledge of symptoms and signs of colorectal cancer. This surprising finding underscores the need to unravel more contributing factors implicated for the poor knowledge of symptoms and signs of colorectal cancer. These may include ignorance in health related issues, cultural mischief, lack of health insurance, low household income and non-availability of awareness programme on prevention, prompt diagnosis and treatment of cancer. In addition, these symptoms are also featured in differential diagnoses of colorectal cancer including haemorrhoids, inflammatory bowel disease, irritable bowel syndrome, and coeliac disease, thus making most patients not to take the symptoms seriously [13]. Thus, high index of suspicion for possibility of colorectal cancer must be entertained by all medical doctors to avoid missing early diagnosis of colorectal cancer.

Besides blood in the stools, other worrisome symptoms and signs acknowledged by the respondents in our study included abdominal pain (6.5%) which is mostly located in the lower abdominal region, as well as altered bowel change (4.8%), anal itching (1.7%) and anal mass protrusion (1.7%). A comparative study in Ireland showed that weight loss and altered bowel habit were the most disturbing symptoms acknowledged by respondents in 50% and 40% of cases respectively [13]. In UK, the two well-recalled warning signs of colorectal cancer were altered bowel habit (23%) and blood in stools (15%) [15]. Furthermore, Petra et al reported that abdominal pain, rectal bleeding, altered bowel habit, and peri-anal symptoms were the worrisome symptoms of colorectal cancer, similar to what were reported in other studies [16]. From the foregoing, it is obvious that warning symptoms of colorectal cancer include blood in stool, frank rectal bleeding, abdominal pain, altered bowel habit, and peri-anal itching. Among the worrisome symptoms, rectal bleeding had been reported to have a high predictive value for colorectal cancer when compared to other

symptoms. Contrary to this, Ford et al reported that rectal bleeding has as low predictive index for colorectal cancer [16,17].

Knowledge of the respondents about the warning symptoms and signs of colorectal cancer was highest among the 36-45 years age group (43.1%) and increased with increasing age (12.3%, 36.9% & 43.1%) for the age groups 16-25, 26-35 and 36-45 years age groups respectively. This agrees with a study conducted in UK where older respondents were better at recognizing signs or symptoms of colorectal cancer [15].

Male respondents were better at recognizing symptoms and signs of colorectal cancer than their counterpart women; they were more likely to recognize a blood in the stools, altered bowel habit, abdominal pain, loss of appetite and irritating sensation at the anus. These findings are in contrast to most studies in which female respondents were better at recognizing symptoms and signs of colorectal cancer including altered bowel habit, bleeding from back passage, blood in stools, pain in back passage, tiredness, and unexplained weight loss [15,18]. This gender disparity could be coincidental since males outnumbered the females in our study or explained the fact that most women are better in seeking for medical helps, less engaged in very strenuous vocations and easily motivated by ugly situations including sickness. This aforementioned explanation may be further supported by a strong association between gender and knowledge of symptoms and signs of CRC observed in our study.

Although high literacy rate was recorded in this study, this appeared not to influence knowledge about worrisome symptoms, signs and risk factors of CRC. It should be noted that majority of the unmarried respondents in this study seemed to be knowledgeable about symptoms and signs of CRC which do not agree with a finding of study in Saudia Arabia in which married respondents were better at recognizing symptoms and signs of CRC [19]. The finding is a reflection of the proportion of unmarried respondents in the study which could also be due to age at marriage especially for working class people (most of the respondents were in the 26-35 years age group). Overall, the role of education in creating awareness of symptoms, signs and risk factors of colorectal cancer among communities in Nigeria especially the young population cannot be overemphasized. In

addition, the sensitization programmes should be centered on prevention, prompt diagnosis and early treatment of colorectal cancer [3].

In our study, among respondents, 56.7% had zero knowledge score for risk factors of CRC while 43.3% of respondents were knowledgeable of the risk factors for colorectal cancer. Concerning respondents' knowledge of colorectal cancer risk factors, the majority of respondents correctly acknowledged diets rich in fats and poor in fibers as the main contributory factor (20.3%). Family history of cancer (14.3%), smoking (4.8%), prolonged alcohol consumption (3.0%), and radiation (0.9%) were other recognizable risk factors. This finding compares with most studies in which risk factors for CRC including increasing age, gender, stress, sedentary life style, obesity, smoking, alcohol consumption, family history of cancer, inflammatory bowel disease (IBD), fatty foods and colonic polyps were reported in varying proportions [2,15,19-21]. Faivre et al. elaborated more on the factors influencing knowledge of risk factors for CRC. Non-modifiable factors include demographics (age, sex, race, ethnicity, and marital status), income, educational level, medical insurance, family history, healthy behaviours (i.e., screening for other cancers) or risky behaviours (i.e., toxic habits, sedentary life), and access to care (i.e., proximity to healthcare facilities, a regular source of care) [19]. On the other hand, modifiable factors include patient knowledge about CRC and screening, attitudes (i.e., perceived benefits of screening and barriers against screening), and perception of risk for developing a CRC [20].

The respondents' knowledge of colorectal cancer risk factors was highest among the 16-25 years age group (45.0%) and post-secondary certified (56.0%). Single, educated male respondents were better at recognizing risk factors of CRC than their counterpart married females. There is strong association between the level of knowledge of risk factors for CRC, age group, marital status and educational background which is comparable to findings of some studies [3]. Thus, it could be suggested that recognition of risk factors for CRC are influenced by some socio-economic factors including age, gender, marital status and educational level. Furthermore, awareness programme needs to be instituted to improve knowledge on risk factors to the development of CRC and possible way of preventing of CRC. These could be achieved by house to house campaign, campaign in

churches, mosques, schools, working places, printing and electronic media houses. In addition, corporate, governmental and non-governmental organizations need to be at the fore in the prevention, early diagnosis and prompt treatment of CRC.

Overall, a proposition to increase knowledge of CRC has been documented in many studies. Such methods include using of health fairs to promote CRC screening practices, adoption of workplace screening for CRC in individuals that might find it difficult to visit hospital, and organizing of CRC screening programmes in places where more younger population could be encountered such as stadium, club houses, cinema and fast food restaurants [19,22,23]. In addition, public and private organizations should be encouraged to include screening for CRC as part of the medical appraisal of new recruits and old staff. Furthermore, door to door campaign in both rural and urban regions with regular visits to schools where children, adolescents and young adults are exposed to knowledge of risk factors, symptoms and signs and screening methods of CRC. Also, there may be a need to increase on knowledge of CRC in general populace through advocating to the TV stars and celebrities to show-case drama or play centered on risk factors, symptoms and signs, and screening methods of CRC. In addition, propaganda flashes, street commercial and institutional posters on risk factors, symptoms and signs, and screening methods of CRC can be displayed to educate the general populace.

5. CONCLUSION

This study concluded that the knowledge of symptoms, signs and risk factors for CRC is still low; Knowledge scores of 28.1% and 43.3% were recorded for the warning symptoms and risk factors of colorectal cancer respectively.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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